

**PATENT COOPERATION TREATY**  
**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
 (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>FNS04017WO</b>	<b>FOR FURTHER ACTION</b>	
International application No. <b>PCT/JP2005/003649</b>		International filing date (day/month/year) <b>03 March 2005 (03.03.2005)</b>
Priority date (day/month/year) <b>04 March 2004 (04.03.2004)</b>		
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant <b>NIPPON SHEET GLASS COMPANY, LIMITED</b>		

<ol style="list-style-type: none"> <li>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44bis.1(a).</li> <li>2. This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</li> <li>3. This report contains indications relating to the following items:           <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input checked="" type="checkbox"/></td> <td style="width: 15%;"><b>Box No. I</b></td> <td style="width: 70%;"><b>Basis of the report</b></td> </tr> <tr> <td><input type="checkbox"/></td> <td><b>Box No. II</b></td> <td><b>Priority</b></td> </tr> <tr> <td><input type="checkbox"/></td> <td><b>Box No. III</b></td> <td><b>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</b></td> </tr> <tr> <td><input type="checkbox"/></td> <td><b>Box No. IV</b></td> <td><b>Lack of unity of invention</b></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><b>Box No. V</b></td> <td><b>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><b>Box No. VI</b></td> <td><b>Certain documents cited</b></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><b>Box No. VII</b></td> <td><b>Certain defects in the international application</b></td> </tr> <tr> <td><input type="checkbox"/></td> <td><b>Box No. VIII</b></td> <td><b>Certain observations on the international application</b></td> </tr> </table> </li> <li>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).</li> </ol>	<input checked="" type="checkbox"/>	<b>Box No. I</b>	<b>Basis of the report</b>	<input type="checkbox"/>	<b>Box No. II</b>	<b>Priority</b>	<input type="checkbox"/>	<b>Box No. III</b>	<b>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</b>	<input type="checkbox"/>	<b>Box No. IV</b>	<b>Lack of unity of invention</b>	<input checked="" type="checkbox"/>	<b>Box No. V</b>	<b>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>	<input checked="" type="checkbox"/>	<b>Box No. VI</b>	<b>Certain documents cited</b>	<input checked="" type="checkbox"/>	<b>Box No. VII</b>	<b>Certain defects in the international application</b>	<input type="checkbox"/>	<b>Box No. VIII</b>	<b>Certain observations on the international application</b>
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<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Faxsimile No. +41 22 338 82 70</p> <p>Form PCT/IB/373 (January 2004)</p>	<p>Date of issuance of this report <b>29 November 2006 (29.11.2006)</b></p> <p>Authorized officer <b>Yoshiko Kuwahara</b> e-mail: pt07@wipo.int</p>
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From the  
INTERNATIONAL SEARCHING AUTHORITY

PATENT COOPERATION TREATY

*TRANSLATION*  
PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:		Date of mailing (day/month/year)
Applicant's or agent's file reference <b>FNS04017WO</b>		FOR FURTHER ACTION See paragraph 2 below
International application No. <b>PCT/JP2005/003649</b>	International filing date (day/month/year) <b>03.03.2005</b>	Priority date (day/month/year) <b>04.03.2004</b>
International Patent Classification (IPC) or both national classification and IPC		
Applicant <b>NIPPON SHEET GLASS COMPANY, LIMITED</b>		

<p>1. This opinion contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion  <input type="checkbox"/> Box No. II Priority  <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input checked="" type="checkbox"/> Box No. VI Certain documents cited  <input type="checkbox"/> Box No. VII Certain defects in the international application  <input type="checkbox"/> Box No. VIII Certain observations on the international application</p> <p>2. <b>FURTHER ACTION</b></p> <p>If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.</p> <p>If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.</p> <p>For further options, see Form PCT/ISA/220.</p> <p>3. For further details, see notes to Form PCT/ISA/220.</p>
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Name and mailing address of the ISA/JP	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/JP2005/003649

Box No. I Basis of this opinion	
1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.	
<input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).	
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:	
a. type of material	
<input type="checkbox"/> a sequence listing	
<input type="checkbox"/> table(s) related to the sequence listing	
b. format of material	
<input type="checkbox"/> in written format	
<input type="checkbox"/> in computer readable form	
c. time of filing/furnishing	
<input type="checkbox"/> contained in the international application as filed.	
<input type="checkbox"/> filed together with the international application in computer readable form.	
<input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.	
3. <input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.	
4. Additional comments:	

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY			International application No. PCT/JP2005/003649																		
Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																				
<p>1. Statement</p> <table> <tr> <td>Novelty (N)</td> <td>Claims <u>2-6, 10-11</u></td> <td>YES</td> </tr> <tr> <td></td> <td>Claims <u>1, 7-9, 12-13</u></td> <td>NO</td> </tr> <tr> <td>Inventive step (IS)</td> <td>Claims <u>6</u></td> <td>YES</td> </tr> <tr> <td></td> <td>Claims <u>1-5, 7-13</u></td> <td>NO</td> </tr> <tr> <td>Industrial applicability (IA)</td> <td>Claims <u>1-13</u></td> <td>YES</td> </tr> <tr> <td></td> <td>Claims _____</td> <td>NO</td> </tr> </table>				Novelty (N)	Claims <u>2-6, 10-11</u>	YES		Claims <u>1, 7-9, 12-13</u>	NO	Inventive step (IS)	Claims <u>6</u>	YES		Claims <u>1-5, 7-13</u>	NO	Industrial applicability (IA)	Claims <u>1-13</u>	YES		Claims _____	NO
Novelty (N)	Claims <u>2-6, 10-11</u>	YES																			
	Claims <u>1, 7-9, 12-13</u>	NO																			
Inventive step (IS)	Claims <u>6</u>	YES																			
	Claims <u>1-5, 7-13</u>	NO																			
Industrial applicability (IA)	Claims <u>1-13</u>	YES																			
	Claims _____	NO																			
<p>2. Citations and explanations:</p> <p>Document 1: JP, 2004-47450, A (Nippon Sheet Glass Co., Ltd.), 12 February, 2004 (12.02.04), Paragraphs [0017]-[0018], [0025]-[0033]</p> <p>Document 2: WO, 00-24075, A1 (JOHNSON MATTHEY PLC.), 27 April, 2000 (27.04.00), claims, &amp; JP, 2002-528868, A, &amp; EP, 1133807, B1, &amp; US, 2004-0208993, A1</p> <p>Document 3: JP, 11-204121, A (Aisin Seiki Co., Ltd.), 30 July, 1999 (30.07.99), claims, &amp; DE, 19901722, A1, &amp; US, 6224994, B1</p> <p>Document 4: WO, 03-041091, A1 (Sekisui Chemical Co., Ltd.), 15 May, 2003 (15.05.03), claims, &amp; CA, 2433320, A1, &amp; EP, 1441365, A1, &amp; US, 2004-0062970, A1</p> <p>The subject matter of claim 1 does not appear to be novel or to involve an inventive step in view of document 1 cited in the ISR. Document 1 discloses a reinforcing material for proton conductive membranes containing a nonwoven fabric mainly composed of glass fibers having the C-glass composition and a binder, in which the said glass fibers have an average fiber diameter of 0.1-20 <math>\mu\text{m}</math> and an average fiber length of 0.5-20 mm.</p> <p>The subject matters of claims 2-5 do not appear to involve an inventive step in view of documents 1-2 cited in the ISR. Document 2 describes a publicly known binder which is formed with a solution containing silica to bind fibers. Document 1 describes a reinforcing material for proton conductive membranes which contains a nonwoven fabric mainly composed of glass fibers having the C-glass composition and a binder. A person skilled in the art could have easily applied the publicly known binder described in document 2 to the binder described in document 1. A person skilled in the art could also have easily determined the suitable ranges for the amount of the binder added when being applied.</p> <p>The subject matters of claims 7-9 do not appear to be novel or to involve an inventive step in view of document 1 cited in the ISR. Document 1 also discloses, with regard to a reinforcing material for proton conductive membranes which contains a nonwoven fabric mainly composed of glass fibers having the C-glass composition and a binder, the constitution in which (1) a basis weight of the said nonwoven fabric is within the range of 2 to 50 g/m<sup>2</sup>, (2) a thickness of the said nonwoven fabric is 400 <math>\mu\text{m}</math> or less, and (3) a porosity of the said nonwoven fabric is within the range of 60 to 98 vol %.</p> <p>The subject matters of claims 10-11 do not appear to involve an inventive step in view of documents 1 and 3-4 cited in the ISR. Documents 3-4 disclose a publicly known technical matter in</p>																					

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY		International application No. PCT/JP2005/003649
Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	
<p>which the surface of a fiber which is a reinforcing material for proton conductive membranes is treated with a silane coupling agent. A person skilled in the art could have easily applied this publicly known technical matter to a reinforcing material for proton conductive membranes described in document 1. Furthermore, a person skilled in the art could also have easily determined an appropriate amount of the silane coupling agent when being applied.</p> <p>The subject matters of claims 12-13 do not appear to be novel or to involve an inventive step. Document 1 also discloses a fuel cell in which a proton conductive film containing a reinforcing material for a proton conductive material and a proton conductive material are provided.</p> <p>None of the documents cited in the ISR and published before the filing date which serves as a basis for the claim of priority of this international application can deny that the subject matter of claim 6 appears to be novel and to involve an inventive step.</p>		

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY		International application No. PCT/JP2005/003649	
Box No. VI	Certain documents cited		
1. Certain published documents (Rule 43bis.1 and 70.10)			
Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2004-319421 A [E, X]	11.11.2004	30.05.2003	27.02.2003
2. Non-written disclosures (Rule 43bis.1 and 70.9)			
Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)	